

WHAT IS CLAIMED IS:

1. A method of manufacturing an electro line for a semiconductor device, comprising:

depositing a molybdenum (Mo) layer on a substrate;

depositing a copper layer (Cu) on the Mo layer;

forming a photoresist pattern on the Cu layer;

etching the Cu layer and the Mo layer using an etchant to form a Mo/Cu electro line, wherein the photoresist pattern is used as a patterning mask; and

removing Mo residue around the Mo/Cu electro line.
2. The method according to claim 1, wherein removing the Mo residue around the Mo/Cu electro line includes oxidizing the Mo residue and removing the oxidized Mo residue.
3. The method according to claim 2, wherein oxidizing the Mo residue includes one of an O₂ ashing process, an Ultra Violet treating process and an O₂ annealing process.
4. The method according to claim 2, wherein removing the oxidized Mo residue includes using one of stripper, deionized (DI) water, and dilute solution including hydrogen fluoride (HF).
5. The method according to claim 2, wherein removing the oxidized Mo residue further includes removing the photoresist pattern.

6. The method according to claim 1, wherein removing the Mo residue around the Mo/Cu electro line is performed using ozone (O_3) water.

7. The method according to claim 1, wherein the etchant includes hydrogen peroxide (H_2O_2).

8. A method of manufacturing a liquid crystal display device including a Mo/Cu electro line, comprising:

forming a gate line and a gate electrode, including:

depositing a molybdenum (Mo) layer on a substrate;

depositing a copper layer (Cu) on the Mo layer;

forming a photoresist pattern on the Cu layer;

etching the Cu layer and the Mo layer using an etchant to form a Mo/Cu electro line, wherein the photoresist pattern is used as a patterning mask; and

removing Mo residue around the Mo/Cu electro line;

forming a gate insulating layer on the gate line and the gate electrode;

forming a semiconductor layer on the gate insulating layer over the gate electrode;

forming a data line, a source electrode and a drain electrode on the semiconductor layer;

forming a passivation layer on the data line, the source electrode and the drain electrode; and

forming a pixel electrode on the passivation layer.

9. The method according to claim 8, wherein removing the Mo residue around the Mo/Cu electro line includes oxidizing the Mo residue and removing the oxidized Mo residue.

10. The method according to claim 9, wherein oxidizing the Mo residue includes one of an O₂ ashing process, an Ultra Violet treating process and an O₂ annealing process.

11. The method according to claim 9, wherein removing the oxidized Mo residue includes using one of stripper, deionized (DI) water, and dilute solution including hydrogen fluoride (HF).

12. The method according to claim 9, wherein removing the oxidized Mo residue further includes removing the photoresist pattern.

13. The method according to claim 8, wherein removing the Mo residue around the Mo/Cu electro line is performed using ozone (O₃) water.

14. The method according to claim 8, wherein the etchant includes hydrogen peroxide (H₂O₂).

15. The method according to claim 8, wherein forming a data line, a source electrode and a drain electrode on the semiconductor layer includes forming a Mo/Cu structure.

16. The method according to claim 15, wherein forming the Mo/Cu structure

includes:

depositing a molybdenum (Mo) layer on a substrate;

depositing a copper layer (Cu) on the Mo layer;

forming a photoresist pattern on the Cu layer;

etching the Cu layer and the Mo layer using an etchant to form a Mo/Cu line,

wherein the photoresist pattern is used as a patterning mask; and

removing Mo residue around the Mo/Cu line.